What is claimed is:

1.   A control unit (100) having at least one processor (100a-1) and at least one memory element (100a-2) for controlling a drive assembly (300), especially an internal combustion engine of a vehicle, with the aid of a sensor/actuator configuration (200) connected between the control unit (100) and the drive assembly (300), the control taking place by a communication between a plurality of functional units filed in the memory element (100a-2);

characterized by a second module (CO) that is closer to the hardware, which is connected to a third module (DE), that is more distant from the hardware, via a signal allocating layer (SZS=HAL) which allocates the digital signals of the one module to the other, being closer to the hardware and more distant from the hardware being referred with respect to the processor.

2.   The control unit as recited in Claim 1,

wherein a first module (ASW) is included, in which those functional units are combined which are used for influencing the drive assembly in response to a user command on a physical level.

3.   The control unit as recited in Claim 1,

wherein the second module (CO) is developed in such a way that in it are combined those functional units which make possible individual programming of the hardware of the control unit in a manner so that the hardware is put into the situation of communicating with the modules of the control unit (100), and which coordinate in time the processing of functions of the functional units in the modules; and the third module (DE) is developed in such a way that in it those functional units are combined which make possible an individual adjustment, of the sensor/actuator configuration (300) used, to control unit (100) in such a way that, between the individual sensors or actuators of the configuration, communication is possible with the remaining modules of the control unit; and between the modules (CO, DE), module interfaces (M1 ... M5) being provided for a module-overlapping communication.

4.   The control unit (100) as recited in Claims 2 an 3,

wherein the first module (ASW) has:

- a vehicle component (VF), in which are combined those functional units which are not

specific for a certain type of drive assembly (300) used; and

– a drive assembly component (EF), in which those functional units are combined which are specific for the type of drive assembly (300) used.

5.   The control unit (100) as recited in one of the preceding claims,

wherein the second module (CO) has:

- an infrastructure component (IS), in which those functional units are combined which offer or represent basic services, which other functional units are able to access; and

- a hardware capsule component (HWE), in which those functional units are combined which make possible an individual programming of the hardware (100a) of the control unit (100) in such a way that the hardware is put in a position to communicate with modules (ASW, CO, DE, CD) of the control unit (100).

6.   The control unit (100) as recited in Claim 5,

wherein the infrastructure component (IS) preferably includes the functional units services library (IS-1), sequence control system (IS-2), diagnosis manager (IS-3) and/or monitoring concept (IS-4).

7.   The control unit (100) as recited in one of the preceding claims,

wherein the control unit (100) has a fourth module (CD), in which those functional units are combined which make possible a direct activation of special sensor/actuator configurations having complex interfaces to the control unit by the first module.

8.   The control unit (100) as recited in one of the preceding claims,

wherein the functional units, the components and/or the modules, as well as the interfaces between them, are developed at least partially as a computer program.

9.   A computer program for a control unit (100) as recited in one of Claims 1 through 7, for controlling of a drive assembly (300) of a vehicle,

including a program code which is suitable for mapping the functional units, components or modules and for implementing communication between these, for the purpose of controlling the drive assembly.

Abstract

The present invention relates to a control unit (100) and a computer program for controlling a drive assembly (300), of a vehicle. Traditionally, in such a control unit (100), numerous functional units are provided, for instance, a functional unit drive, engine coordinator,

5   diagnosis manager, etc. In the case especially of a change in the drive assembly that is to be activated by the control unit, in order to have to replace not all, or a large part of the functional units, but only the functional units relevant for the new drive assembly, according to the present invention, a modularization of these functional units is proposed. This modularization provides, in particular, that those functional units are combined which make

10   possible individual programming of the hardware of the control unit in such a way that the hardware is put in a position to communicate with the modules of the control unit 100.

Figure 1